

WHAT IS CLAIMED IS:

1. A radio LAN data transmission system comprising:
  - a host station, a relay station having a plurality of access points,
  - and a mobile station having a radio LAN apparatus that transmits data
  - 5 to and receives data from the host station via the relay station, wherein
  - the radio LAN apparatus includes
    - a memory unit that temporarily stores transmission data
    - that is data to be transmitted to an access point; and
    - a memory control unit that provides a control to store the
    - 10 transmission data in the memory unit at the time of switching from one
    - access point to another access point, and to transmit the transmission
    - data to the another access point when the radio LAN apparatus
    - establishes a communication link with the another access point.
- 15 2. The radio LAN data transmission system according to claim 1,  
wherein a desired one of the access points includes:
  - a storage unit that temporarily stores input data; and
  - a data smoothing unit that smoothes the input data to generate
  - an output data while the input data is being read from the storage unit.
- 20 3. The radio LAN data transmission system according to claim 1,  
wherein each access point includes:
  - a storage unit that temporarily stores input data; and
  - a data smoothing unit that smoothes the input data to generate
  - 25 an output data while the input data is being read from the storage unit.

4. The radio LAN data transmission system according to claim 2,  
wherein the data smoothing unit outputs the output data at a  
transmission speed that is different from a transmission speed at which  
5 the input data is read.

5. The radio LAN data transmission system according to claim 3,  
wherein the data smoothing unit outputs the output data at a  
transmission speed that is different from a transmission speed at which  
10 the input data is read.

6. The radio LAN data transmission system according to claim 4,  
wherein the data smoothing unit outputs the output data at a  
transmission speed that is lower than a transmission speed at which the  
15 input data is read.

7. The radio LAN data transmission system according to claim 5,  
wherein the data smoothing unit outputs the output data at a  
transmission speed that is lower than a transmission speed at which the  
20 input data is read.

8. The radio LAN data transmission system according to claim 2,  
wherein each access point further includes:  
a memory monitoring unit that outputs a completion signal to an  
25 access point other than the one access point, when reading of all the

data stored in the storage unit has finished; and

a completion signal detecting unit that detects a completion signal output from a memory monitoring unit of an access point other than the one access point.

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9. The radio LAN data transmission system according to claim 3, wherein each access point further includes:

a memory monitoring unit that outputs a completion signal to an access point other than the one access point, when reading of all the data stored in the storage unit has finished; and

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a completion signal detecting unit that detects a completion signal output from a memory monitoring unit of an access point other than the one access point.

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10. The radio LAN data transmission system according to claim 2, wherein a desired one of the access point includes:

a packet number detecting unit that detects a first packet number that is a packet number of data transmitted from an access point other than the one access point and a second packet number that is a packet number of data transmitted from the radio LAN apparatus;

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a packet number comparing unit that compares the first packet number and the second packet number, and generates a packet number result; and

a transmission data control unit that controls a sequence of transmitting the transmission data, based on the packet number result.

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11. The radio LAN data transmission system according to claim 3,  
wherein a desired one of the access point includes:

a packet number detecting unit that detects a first packet  
5 number that is a packet number of data transmitted from an access  
point other than the one access point and a second packet number that  
is a packet number of data transmitted from the radio LAN apparatus;

a packet number comparing unit that compares the first packet  
number and the second packet number, and generates a packet number  
10 result; and

a transmission data control unit that controls a sequence of  
transmitting the transmission data, based on the packet number result.

12. The radio LAN data transmission system according to claim 2,  
15 wherein a desired one of the access point includes:

a time stamp detecting unit that detects a first time stamp that is  
a time stamp of data transmitted from an access point other than the  
predetermined access point and a second time stamp that is a time  
stamp of data transmitted from the radio LAN apparatus;

20 a time stamp comparing unit that compares the first stamp and  
the second time stamp, and generates a time stamp result; and

a transmission data control unit that controls a sequence of  
transmitting the transmission data, based on the time stamp result.

25 13. The radio LAN data transmission system according to claim 3,

wherein a desired one of the access point includes:

a time stamp detecting unit that detects a first time stamp that is a time stamp of data transmitted from an access point other than the predetermined access point and a second time stamp that is a time

5 stamp of data transmitted from the radio LAN apparatus;

a time stamp comparing unit that compares the first stamp and the second time stamp, and generates a time stamp result; and

a transmission data control unit that controls a sequence of transmitting the transmission data, based on the time stamp result.

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14. A radio LAN data transmission method of transmitting data between a mobile station having a radio LAN apparatus and a host station, via a relay station having a plurality of access points, comprising:

15 temporarily storing transmission data in the radio LAN apparatus;

detecting whether a link between the radio LAN apparatus and any one of the access points is established;

reading the transmission data stored when it is detected at the  
20 detecting that a link between the radio LAN apparatus and any one of the access points has been established.

15. The radio LAN data transmission method according to claim 14, further comprising:

25 temporarily storing data acquired by the access point in the

access point; and

reading the data stored and then smoothing the data.

16. The radio LAN data transmission method according to claim 15,

5 further comprising:

detecting an amount of data left unread in the access point;

generating a reading completion signal when it is detected at the

detecting that the amount is zero; and

starting the transmission of the data, from the access point that

10 receives the reading completion signal.

17. A computer program that executes data transmission between a  
mobile station having a radio LAN apparatus and a host station, via a  
relay station having a plurality of access points, the program making a

15 computer execute:

temporarily storing transmission data in the radio LAN  
apparatus;

detecting whether a link between the radio LAN apparatus and  
any one of the access points is established;

20 reading the transmission data stored when it is detected at the  
detecting that a link between the radio LAN apparatus and any one of  
the access points has been established.

18. The computer program according to claim 17 further making the

25 computer execute:

temporarily storing data acquired by the access point in the  
access point; and

reading the data stored and then smoothing the data.